

CLIMATE OF UTAH

TOPOGRAPHIC FEATURES – The topography of Utah is extremely varied, with most of the State being mountainous. A series of mountains (including the Wasatch Range), which runs generally north and south through the middle of Utah, and the Uinta Mountains, which extend east and west through the northeast portion, are the principal ranges. Crest lines of these mountains are mostly above 10,000 feet. Less extensive ranges are scattered over the remainder of the State. The lowest area is the Virgin River Valley in the southwestern part with elevations between 2,500 and 3,500 feet, while the highest point is Kings Peak in the Uinta Mountains, which rises to 13,498 feet.

Practically all of eastern Utah is drained by the Colorado River and its principal tributary within the State, the Green River, although neither rises within its borders. Western Utah is almost entirely within the Great Basin, with no outlet to the sea. The largest rivers in this area are the Bear, Weber, Jordan, Provo, and Sevier, the first three of which empty into Great Salt Lake, The Sevier River drains the west-central area and empties into Sevier Lake, a brackish saline basin in southwest Utah.

The main streams in the eastern portion of the State flow through canyons or very narrow, confined mountain valleys and finally into desert canyons. Some meadows, usually in native grass, and only a few small local areas of farmland are subject to overflow. Nearly all the main highways and railroads, as well as residential areas, are above flood levels. Highest flow occurs in the streams in this region in May and June during spring runoff from melting snow.

The most serious floods in Utah have occurred in the Great Lake Basin, particularly in the Weber River drainage on the western slopes of the Wasatch Mountains. During the past 100 years approximately 300 flash floods, resulting from high intensity rainfall accompanying thunderstorms, and 135 snowmelt floods, have been recorded. Some have been very limited in area and extent of damage, while others have been highly destructive in cities, towns and agricultural areas. However, severe floods are not likely to occur in any given locality more than once in several years, or even several decades.

Great Salt Lake, in northwestern Utah, lies in the Great Basin, the largest closed basin in North America. Part of this drainage area is below 4,500 feet in elevation, with the Lake being about 4,200 feet. Great Salt Lake is the largest lake at this elevation (or higher) in the world. In glacial times it was a fresh water lake occupying an area 346 miles long and 145 miles wide; but due to increased evaporation and/or reduced precipitation, it gradually shrank in size and the salinity increased. Since this large body of water now has no drainage outlet, the salt content is high, averaging about 25 percent. Thus, the Lake, which never freezes over, provides a moderating effect throughout the year on temperatures in the immediate vicinity.

GENERAL CLIMATIC FEATURES – Essentially, Utah's climate is determined by its distance from the equator; its elevation above sea level; the location of the State with respect to the average storm paths over the Intermountain Region; and its distance from the principal moisture sources of the area, namely, the Pacific Ocean and the Gulf of Mexico. Also, the mountain ranges over the western United States, particularly the Sierra Nevada and Cascade Ranges and the Rocky Mountains, have a marked influence on the climate of the State. Pacific storms, before reaching Utah, must first cross the Sierras or Cascades. As the moist air is forced to rise over these high mountains, a large portion of the original moisture falls as precipitation. Thus, the prevailing westerly air currents reaching Utah are comparatively dry, resulting in light precipitation over most of the State.

TEMPERATURE – There are definite variations in temperature with altitude and with latitude. Naturally, the mountains and the elevated valleys have the cooler climates, with the lower areas of the State having the higher temperatures. There is about a 3° F decrease in mean annual temperature for each 1,000-foot increase in altitude, and approximately 1.5 to 2° F decrease in average yearly temperature for each one degree increase in latitude. Thus,

weather stations in the southern counties generally have average annual temperatures 6 to 8 degrees higher than those at similar altitudes over the northern counties.

Temperatures below zero during winter and early spring are uncommon in most areas of the State, and prolonged periods of extremely cold weather are rare. This is primarily due to the mountains east and north of the State, which act as a barrier to intensely cold continental Arctic air masses. The lowest temperature of record is 50° F below zero.

Utah experiences relatively strong insolation during the day and rapid nocturnal cooling, resulting in wide daily ranges in temperature. Even after the hottest days, nights are usually cool over the State.

On clear nights the colder air accumulates, by drainage, on the valley bottoms, while the foothills and bench areas remain relatively warm. For this reason, the higher lands at the edges of the valleys are devoted ordinarily to the more valuable and delicate fruits, berries, and vegetables, while the hardier grains and vegetables are planted in the bottom lands.

Owing to the varied topography of the State, there are no orderly nor extensive zones of equal length of growing season between the last freeze in spring and the first in fall. There are, however, from 4 ½ to 5 months of freeze-free growing weather in the State's principal agricultural areas. A difference of two weeks in the growing season is often noted in the same valley between the bottomlands and the adjacent farming lands at the foot of the mountains.

PRECIPITATION – Precipitation varies greatly, from an average of less than five inches annually over the Great Salt Lake Desert (west of Great Salt Lake), to more than 40 inches in some parts of the Wasatch Mountains. The average annual precipitation in the leading agricultural areas is between 10 to 15 inches, necessitating irrigation for the economic production of most crops. However, the mountains, where winter snows form the chief reservoirs of moisture, are conveniently adjacent to practically all farming areas, and there is usually sufficient water for most land under irrigation. The areas of the State below an elevation of 4,000 feet, all in the southern part, generally receive less than 10 inches of moisture annually.

Northwestern Utah, over and along the mountains, receives appreciably more precipitation in a year than is received at similar elevations over the rest of the State, primarily due to terrain and the direction of normal storm tracks. The bulk of the moisture falling over that area can be attributed to the movement of Pacific storms through the region during the winter and spring months. In summer northwestern Utah is comparatively dry. The eastern portion receives appreciable rain from summer thunderstorms, which are usually associated with moisture-laden air masses from the Gulf of Mexico.

Snowfall is moderately heavy in the mountains, especially over the northern part. This is conducive to a large amount of winter sports activity, including skiing and hunting. While the principal population centers along the base of the mountains receive more snow, as a rule, than many middle and northeastern sections of the United States, a deep snow cover seldom remains long on the ground.

Runoff from melting mountain snow usually reaches a peak in April, May or early June, and sometimes causes flooding along the lower streams. However, damaging floods of this kind are infrequent. Flash floods from summer thunderstorms are more frequent, but they affect only small, local areas.

OTHER CLIMATIC FEATURES – Sunny skies prevail most of the year in Utah. There is an average of about 65 to 75 percent of the possible amount of sunshine at Salt Lake City during spring, summer, and fall. In winter Salt Lake City has about 50 percent of the possible sunshine.

During the late fall and winter months, anticyclones tend to settle over the great Basin for as long as several weeks at a time. Under these conditions, smoke and haze accumulate in the lower levels of the stagnant air over the valleys of northwestern Utah, frequently becoming an obstruction to visibility. This is also true of fog which may persist for several weeks at a time.

Wind speeds are usually light to moderate, ranging below 20 miles per hour. There are only a few tornadoes in Utah as a rule, and those reported usually cause only slight damage. However, strong winds occur occasionally, sometimes attaining damaging proportions in local areas, particularly in the vicinity of the canyon mouths along the western slopes of the Wasatch Mountains. Dust storms occur occasionally, principally over western Utah. These storms are associated with the movement of low-pressure disturbances through the area during the spring months.

Hailstorms may damage fruit and vegetables in limited areas during spring and summer, although the hail is usually small.

CLIMATE AND THE ECONOMY – Utah is not a large agricultural state, even through appreciable crops, livestock, and dairy products are produced within its boundaries. Only four percent of the land is under cultivation, but approximately 35 percent of the land area is utilized for livestock grazing purposes. Livestock represent the largest portion of cash farm income within the State. The largest crop is wheat, most of it being “winter” or “dryland” wheat. Other principal crops are barley, oats, hay, potatoes, corn, and sugar beets. Lesser crops include other grains, fruits, vegetables, berries, melons, dry beans, and alfalfa and sugar beets for seed. Range feeds and dryland crops in nonirrigable areas, particularly in the southern portion, often suffer from lack of moisture.

Mining and manufacturing are the two other basic industries in Utah. The State ranks high in the quantity and value of minerals it produces each year, mainly copper, lead, zinc, gold, and silver. Because of the dry climate, several companies have found it economically feasible to produce salt from the brine of the Great Salt Lake by the evaporation process.

Salt lake City is the commercial, industrial, and financial center of Utah. Three-fourths of the State’s population is concentrated within a 100-mile radius of that City, and well over one-half the people reside within 50 miles of Salt Lake City.

Tourists come to Utah primarily to visit historic Salt Lake City; to see the Great Salt Lake; to tour the park areas, including Zion National Park, Cedar Breaks National Monument, and Bryce Canyon National Park; and to fish in the cool mountain streams. Persons traveling in the State during the winter and early spring months should be prepared for cold weather and snow. When crossing the less-frequently traveled desert areas of the western portion, motorists should carry a supply of fresh water as a safeguard, particularly during the summer months.